1. Agreement basis

1.1. Communication mode

The communication mode adopted in this Agreement shall comply with the relevant provisions in JT / T 794. The communication protocol adopts TCP, with the platform as a function

On the server side, the terminal acts as the client side.

1.2. Data type

The data types used in the protocol messages are shown in Table 1

Table 1: Data types

data type	Description and requirements
BYTE	Unsigned single-byte integer (byte, 8-bit)
WORD	Unsigned double-byte integer (word, 16 bits
DWORD	Unsigned four-byte integer (double word, 32-bit)
BYTE[n]	n byte
BCD[n]	8,421 yards, and n bytes
STRING	GBK coding, if no data, empty

1.3. Transmission rules

The protocol adopts the network byte order of large end mode (big-endian) to pass words and double characters.

The agreement is as follows:

-------Byte (BYTE) transmission agreement: according to the way of byte flow transmission; - - - - - - -word (WORD) transmission agreement: first pass high eight bits, then pass low eight bits;

-------Two byte (DWORD) transmission convention: first pass 24 bits, then pass 16 bits, in the transfer high eight bits, and finally pass low eight bits.

1.4 Composition of the messages

1.4.1 Message structure

Each message consists of identification bit, message header, message body and check code. The message structure is shown in Figure 1:

Figure 1 Message structure diagram

Identify the position	headers	The message body	check code	Identify the position

1.4.2 Identifier bit

Using 0x7e, if 0x7e appears in the check code, message header and message body, the escape rule is defined as follows:

0x7e 0x7d is followed by a 0x02;

0x7d 0x7d later is closely followed by a 0x01

The transfer process is as follows:

When sending the message: the message encapsulates the computer and populates the check code escape; when receiving the message: escape and restore the verification check code resolution message.instance:

Send a packet of 0x30 0x7e 0x08 0x7d 0x55 is packaged as follows:

0x7e 0x30 0x7d 0x02 0x08 0x7d 0x01 0x55 0x7e。

1.4.3 Message header

See Table 2 for message header.

Table 2 Message head content

Start bytes	field	data type	explain
0	message ID	WORD	Message type
2	Message body property	WORD	See Figure 2 for the message body attribute format structure
4	Terminal mobile phone number	BCD[6]	Terminal device number or a 12-bit terminal ID
10	Message serial number	WORD	Cycle accumulates from 0 in sending order
12	Message pack encapsulation item		See description for details

The message body attribute format structure is shown in Figure 2:

Figure 2: Structure diagram of message body properties

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
continue to have		subpackage	Data encryption							Message body length					

Data encryption mode:

------------bit10~bit12 identifies the data encryption; - - - - - - - - - - - -when all three bits are 0, indicating that the message body is not encrypted; - - - - - - - - - - - - -when the 10th bit is 1, indicating that the message body is encrypted by RSA algorithm; - - - - - - - - - - - -other retention

subpackage:

When the 13th digit in the message body attribute is 1, the message body is long, the line subcontracts sends processing, the specific subcontracting information is determined by the packet package item; if the 13th digit is 0, there is no packet package item field in the message header.

See Table 3 in packet package.

Table 3 Message of package package package

Start bytes	field	data type	Description and requirements

0	Message total package number	WORD	Total number of packages after this message
2	Package serial number	WORD	Start with 1

1.4.4 Check code

Check code refers to the message beginning, the same last byte or, until the first byte of the check code, occupy 1 word

2. Data format

2.1 Terminal General Response [0001]

message ID:0x0001
The message-body data format is shown in Table 4

Table 4 Terminal general response message body data format

Start bytes	field	data type	Description and requirements
0	Answer serial number	WORD	Serial number of the corresponding platform message
2	reply ID	WORD	The ID of the corresponding platform message
4	bear fruit	BYTE	0: Success / confirm; 1: failure; 2: message error; 3: not supported

2.2 Platform General Response [8001]

message ID:0x8001.

The data format of the platform general reply message body is provided in Table 5

Table 5 Platform general answer message body data format

Start bytes	field	data type	Description and requirements
0	Answer serial number	WORD	Serial number of the corresponding platform message
2	reply ID	WORD	The ID of the corresponding terminal message
4	bear fruit	BYTE	0: Success / confirm; 1: failure; 2: message error; 3: not supported;

12.3 Terminal heartbeat [0002]

message ID:0x0002

Terminal heartbeat message body is empty.

2.4 Terminal Registration [0100]

message ID:0x0100

Terminal registration message body data format is shown in Table 6.

Table 6 Terminal registration message body data format

Start bytes	field	data type	Description and requirements
0	provincial ID	WORD	Marking the province where the terminal is installed, 0 is reserved, and the platform takes the default price. Provincial ID adopts the top two of the six administrative division codes stipulated in GB / T 2260
2	City and county area ID	WORD	Mark the city where the terminal installed vehicle is located, 0 is reserved and the platform defaults price. The city and county ID adopts the last four of the six digits in the administrative division code stipulated in GB / T 2260
4	manufacturer ID	BYTE[5]	Five bytes, with the terminal manufacturer number
9	Terminal model	BYTE[20]	20 bytes, this terminal model is defined by the manufacturer, the number is less than eight, fill 0,
17	terminal ID	BYTE[7]	Seven bytes, composed of capital letters and numbers, this terminal ID by the manufacturer Definition by oneself
24	License plate color	BYTE	License plate color, according to the provisions of JT / T 415- -2006 When card, the value is 0
25	plate number	STRING	When the license plate color is 0, here indicates the vehicle VIN number; otherwise, the locomotive license plate issued by the public security traffic management department.

2.5 Terminal Registration Response [8100]

message ID:0x8100

Terminal format message message format is format in Table 7.

Table 7 Terminal registration reply message body data format

Start bytes	field	data type	Description and requirements
0	Answer serial number	WORD	Serial number of the corresponding terminal registration message
2	bear fruit	BYTE	0: Success; 1: vehicle is registered; 2: no vehicle in the database; 3: terminal is registered; 4: no vehicle in the database
3	Authentication code	STRING	The field is only after success

2.6 Terminal cancellation [0003]

message ID:0x0003

The terminal cancellation message body is empty.

2.7. Terminal authentication [0102]

message ID:0x0102

The data format is shown in Table 8-1.

Table 8-1 Data format of the terminal authentication message body

Start bytes	field	data type	Description and requirements
0	Authentication code		See Table 8-2

Table 8-2 Data format of the platform reply terminal authentication message body

Start bytes	field	data type	Description and requirements
0	Answer serial number	WORD	The flow water of the corresponding terminal message
2	reply ID	WORD	0x0102: Terminal authentication message ID
4	bear fruit	BYTE	0: Success / confirmation; 1: failure

2.11 Text information distribution [8300]

message ID:0x8300.

See text format of the message format in Table 9.

Table 9 Text message message data format

Start bytes	field	data type	Description and requirements
0	sign	BYTE	Text message marks are shown in Table 9-1
1	Text information	STRING	The longest is 1024, bytes, encoded by GBK

Table 9-1 Text message logo bit contains the end

Position	sign
0	1: Emergency
1-7	Not used

2.13 Location Information Report [0200]

The location information report message body consists of position basic information and a list of location additional information items. The message structure is shown in Figure 3.

graph 3Location report message structure diagram

position information	List of location-additional information items

The list of location additional information items is combined with, or without, position additional information items, depending on the length field in the message header. Location basic information data format is shown in Table 10.

Table 10 Location basic information data format

Start bytes	field	data type	Description and requirements
0	warning mark	DWORD	Table 11 is defined
4	status flag	DWORD	State-bit definitions are provided in Table Table 12
8	latitude	DWORD	The dimensional value in degrees is multiplied by the six power of 10 to one thousandths of a million
12	longitude	DWORD	The dimensional value in degrees is multiplied by the six power of 10 to one thousandths of a million

16	altitude	WORD	Altitude, measured in metres (m)
18	velocity	WORD	1/10km/h
20	direction	WORD	0- -359, due north is 0, clockwise
22	time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT + 8, all time involved in this standard)

Table 11 Alarm standard bit definition

Position	definition	processing specification
0-7	Not used	
8	See the light alarm / remove the alarm	
9-31	Not used	

Table 12 State bit definition

Position	definition
0	0: ACC off; 1: ACC on
1	0: Not positioned; 1: positioned
2-31	Not used

Location additional information item format is shown in Table 13

Table 13 Location additional information item format

Position	definition	Description and requirements
AI ID	B YTE	Description and requirements
Additional information length	B YTE	
AI		Additional information definitions are provided in Table 14

Table 14 Additional information definition

AI ID	Additional information length	data type	Description and requirements
0x 5D	N		4G base station data The first byte is the number of base stations, followed by n base station data; 0x5D 1 + n * 10 base station data: 0-1 MCC; 2 MNC; 3-4 LAC; 5-8 CELLID; 9 signal intensity
0Xf6	3 b yte		0xf6 03 byte0 byte1 byte2 Byte 0 temperature 8 bits (negative temperature maximum is 1), byte 1 humidity low 8 bits unit 0.01 The te 2 is humidity 0 to 100
0xEB	N		For the extended protocol data, see the below

3. Location data extension protocol and data format

1. AD magnitude of voltage

name	Length (2 byte)	Instructions (2 byte)	Data (3 byte)
AD magnitude of voltage	0x0004	0x002D	29 22 00
give an example	Data: 0004002D30D5 Unit: mV Explanation: 0x30D5=12.501V		

2. Battery remaining power percentage value

name	Length (2 byte)	Instructions (2 byte)	Content (2 byte)
Power number	0x0004	0x0008	05 D6
give an example	Data: 0004000805D6 Explanation: 05 D6 05D6 to 10 M = 1494 The total number of the equipment is 1500, (1494 / 1500)%=99.60%		

3. Software version information

name	Length (2 byte)	Instructions (2 byte)	Content (N b yte)
version number	N +2	00A3	N
give an example	Data: 001100A359473032445F5436335F56302E373B		

4. Expand the alarm status bit

name	Length (2 byte)	Instructions (2 byte)	Content (4 byte)
Alarm	0x 0006	0x0089	FF FF FF FF
give an example	Note: b it 12=1 is normal, and b it12=0 is removed		

5. GSM base station (2G terminal used)

name	Length (2 byte)	Instructions (2 byte)	Content (34 byte)
Multiple base stations	0x0024	0x00A9	
explain	V= country number, operator number, number of base stations, [area code # # 1, tower # # 1, signal strength # 1,............. Area code # 6, Tower # # 6, Signal strength # 6] Country number: 2 bytes, HEX, 0x01CC, 460 Operator number: occupy 1 byte, the HEX representation, such as 0x00 Number of base stations: occupy 1 byte, with HEX representation, such as 0x06, with up to 6 base stations supported Area code: occupy 2 bytes, HEX indicates that the high level is before, the low level is behind, such as 0x262C Tower number: occupy 2 bytes, HEX indicates that the high level is in front, the low level is behind, such as 0x04BA Signal intensity: occupy 1 byte, HEX representation, such as 0x58, the original value Note: If there is no base station information, the corresponding area code, tower number and signal strength are all filled in 0		

6. wifi data

name	Length (2 byte)	Instructions (2 byte)	content
Wifi hot spot	N +2	0x 00B9	It consists of the number of WIFI hotspots (1B) + WIFI hotspots (nB)
explain	Number of hot spots: 0x01~ 0x05, up to 5 groups, represented by HEX WIFI hotspot format: WIFI MAC address + signal value composition, ASCALL code representation, Example: 24:69:68:5d: 2c: A 5, -30 Multi-group format: 24:69:68:5d:2c:a5,-30,2e:d0:5a:42:16:ad,-69,5c:0e:8b:8b:ca:50,-70,5c:0e:8b:8b:ca:52 ,-70,78:a1:06:6f:bb:fe,-70 Data sample: 00 70 00 B9 05 32 63 3A 36 31 3A 30 34 3A 37 39 3A 64 33 3A 39 63 2C 2D 35 32 2C 66 30 3A 39 32 3A 62 34 3A 31 38 3A 63 63 3A 35 31 2C 2D 36 36 2C 63 63 3A 30 38 3A 66 62 3A 39 38 3A 62 37 3A 39 35 2C 2D 37 30 2C 33 30 3A 66 63 3A 36 38 3A 65 64 3A 62 32 3A 37 36 2C 2D 37 34 2C 39 63 3A 61 36 3A 31 35 3A 39 66 3A 64 30 3A 62 30 2C 2D 37 34		

7. Expand the location status

name	Length (2 byte)	Instructions (2 byte)	Content (4 byte)
Locate the state	0x0006	0x00C5	00 00 10 08
explain	State[31~0] Bit 3 / Bit 4 Location status: Bit 3 = 0 Bit 4 = 0 is not positioned Bit 3 = 1 Bit 4 = 0 GPS localization Bit 3 = 0 Bit 4 = 1 WIFI localization Note: During the wifi location, the terminal will report the Mac address to the server and obtain the longitude and latitude, so the longitude and latitude in the 0x80 location data packet can be resolved,		

8.sim ICCID

name	Length (2 byte)	Instructions (2 byte)	content
I CCID	0x000C	0x00B2	20 byte
give an example	000C00B289860455161990868815		

9. Single base station

name	Length (2 byte)	Instructions (2 byte)	content
Single base station	N +2	0x0024	N
explain	give an example: 00 16 00 24 34 36 30 3B 30 3B 39 33 36 39 3B 32 31 33 36 31 32 34 31 38 Escape: 460; 0; 9369; 213612418 Four fields: country, operator, area code, tower number		

10. Single base station (4G LTE)

name	Length (2 byte)	Instructions (2 byte)	content
Single base station	0x 000B	0x00D8	N
explain	give an example: 00 16 00 24 34 36 30 3B 30 3B 39 33 36 39 3B 32 31 33 36 31 32 34 31 38 Escape: 460; 0; 9369; 213612418 Four fields: country, operator, area code, tower number		

11. The percent of the power remaining

name	Length (2 byte)	Instructions (2 byte)	Content (1 byte)
Power number	0x0003	0x00A8	05 D6
give an example	Data: 000300A864 Explanation: 0x 64 to 10 MIR: 100; namely the current charge remaining 100%		

12.A D voltage value

name	Length (2 byte)	Instructions (2 byte)	Data (3 byte)
AD magnitude of voltage	0x0005	0x0004	29 22 00
give an example	Data: 00050004292200 Explanation: 29 22 00 means 2.92200V, generally retain two bits, namely 2.92V		